

## **ATTACHMENT 2**

### **Drought Impacts**

#### **2.1 Drought Impacts**

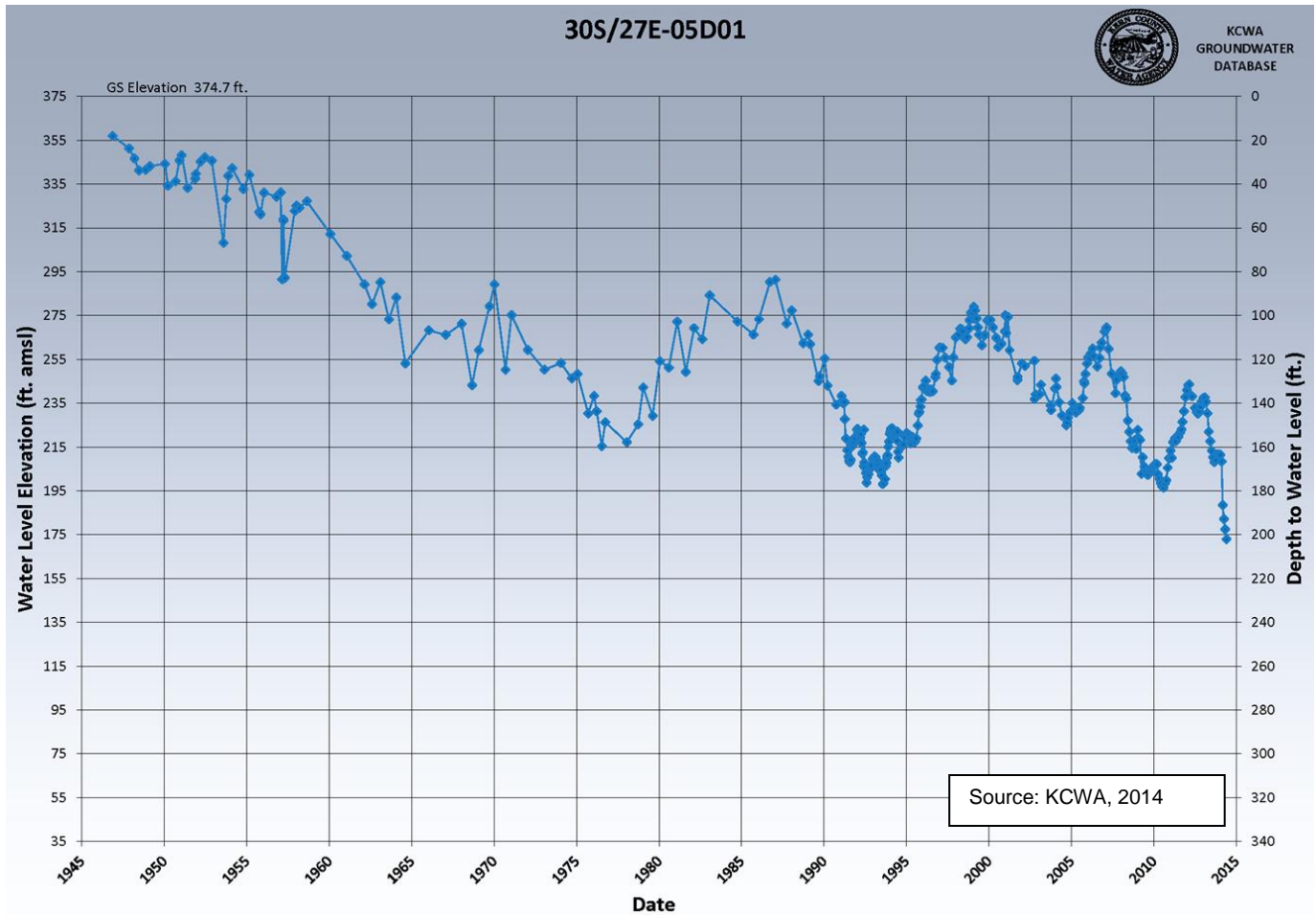
With three consecutive years of dismal surface water supplies, including six of the last eight years being below normal, the Kern Region is seriously impacted by the current drought and will have difficulties meeting water demands for local communities and farms. It shall be noted, when compared to historical events, the two above normal years since 2007 provided reduced supplies to the Kern Region as a result of regulatory and environmental constraints. In 2014, the Kern River is estimated to provide only 150,000 acre-feet (AF) compared to the average annual yield of 764,000 AF. In fact, for the three years of drought, this will be the driest 3 year stretch in the river's recorded history. The 2014 carryover in Lake Isabella is at its lowest volume since the dam's construction. The 5% State Water Project (SWP) allocation will result in approximately 50,000 acre-feet for the Kern Region, with delivery post September 1 and after the peak irrigation season. Additionally, the Friant Division of the Central Valley Project (CVP) will not yield any water supply (0%), the lowest allocation in its 65 year history. Much of the Kern Region will depend on groundwater that is being pumped from deeper levels, which in some areas, are even deeper than experienced prior to the implementation of the SWP and CVP. With these water supply impacts, local communities and farms have had, and will continue to have, multiple drought related impacts as discussed in the following sections.

#### **At risk of not meeting existing drinking water demands**

With the majority of the population centers in the Kern Region overlying and utilizing groundwater aquifers, the drought has caused lowering of the water table, which impacts drinking water systems by increasing groundwater pumping costs, including requiring the lowering of pumps and/or drilling of deeper wells (if drillers are available) as well as related water quality changes with deeper pumping levels. With inadequate snowpack to recharge local aquifers, some mountain communities are running out of water to meet drinking water demands. As an example, the 300 homes served by the Lake of the Woods Mutual Water Company do not have sufficient water supply as just two out of their five wells are producing water. The County of Kern and CDPH are currently working with communities like these to address their needs with expedited funding that is available this year. In the Lake of the Woods case, they have received a grant of \$750,000 to drill new wells since losing three of its existing wells due the dropping water table.

In the case of the Metropolitan Bakersfield area and other communities on the valley floor, the majority of drinking water demands are being met by groundwater pumped from the Kern Sub-basin. In response to the dropping water table, well pumps are being lowered; for example, the City of Bakersfield has lowered pumps in 10 of its 53 wells. ID4, which provides wholesale water to water purveyors in the Metropolitan Bakersfield area, has also seen the water table drop at its recovery wells that deliver previously banked groundwater through the Cross Valley Canal (CVC) to the Henry C. Garnett Water Purification Plant (see **Figure 2-1.1**). This year, the CVC Extension is a crucial facility as it conveys approximately 32,000 AF of groundwater to the Henry C. Garnett Water Purification Plant, which has a treated water service area population of approximately 185,000 residents in the Metropolitan Bakersfield area. In the past, there have been concerns with excessive seepage losses in the unlined CVC Extension, especially during drought conditions. In addition, potential failures of the CVC Extension embankment could cause water deliveries to the Henry C. Garnett Water Purification Plant to be interrupted as well as cause property damage along the CVC.

In this current drought, other smaller water systems are especially vulnerable as they typically only have a small number of wells to serve their customers and are at risk of not being able to meet drinking water demands. Disadvantaged communities (DACs) have an exceptional hardship as they typically do not have the funding reserves to handle emergencies and increased operational costs. As an example, Buttonwillow County Water District (BCWD) has two main water wells that serve an estimated population of 1,500 (a third backup well is not typically operated due to a damaged casing that causes sand to build up in the system making it expensive to



**Figure 2.1-1: Long-term Hydrograph of Monitoring Well Located near California State University at Bakersfield**

operate). The two main wells have a design flowrate of 1,450 gallons per minute (gpm), but with groundwater levels dropping, these two wells produce approximately 1,050 gpm of water supply. Customer demands are estimated to be 1,065 gpm for the warmest days of the year, requiring the use of the standby well. If either well becomes inoperable, BCWD will not be able to meet water demands in the summer without mandatory water restrictions. Additionally, water restrictions would be difficult to enforce as the District is unmetered and District staff would not know the volume of water conserved by a customer. If shortages were to ensue due to inadequate conservation, dangerously low pressures in the water system could allow for potential contamination and inadequate supply for fire protection.

If the drought continues into 2015, BCWD may be impacted with a dropping water table and may be at risk of not meeting water demands in their system even with all three wells operating. ID4 may have difficulties with providing requested drinking water supplies to its purveyors should the water table continue to drop at the rates that have occurred during this drought. Both BCWD and ID4 will have increased operating cost from greater power bills as a result of the deeper pumping levels and potentially greater treatment cost related to water quality changes.

#### **At risk of not meeting existing agricultural water demands**

With the minimal surface water supply available this year, the Kern Region's existing agricultural demands have not been fully met even with additional groundwater pumping. The agricultural community is expected to lose production and income from thousands of acres of fallowed land that previously had annual crops, reduction of

crop yields including loss of income due to under-irrigation of permanent crops, and also lose some permanent crops (the impacts of which will be felt for many years).

The Buena Vista Water Storage District (BVWSD) is dependent upon its Kern River water rights that yield on average 124,000 AF, and its supplemental SWP allocation of 21,300 AF. This year, BVWSD expects a total surface water supply of 12,000 AF. Many of the farmers in the District will be utilizing the groundwater aquifer to meet irrigation demands. However, the District is being proactive in managing the aquifer by implementing its Landowner Fallowing Program to minimize the groundwater extractions. The program has resulted in the fallowing of 8,291 acres of previously active farmland out of the total district area of 40,000 acres (20% of the District).

Arvin Edison Water Storage District's (AEWSD) sole water supply contract is its Friant contract from the United States Bureau of Reclamation's (USBR) CVP to, among other things, provide irrigation water and groundwater recharge to stabilize groundwater levels for approximately 132,000 acres of highly productive crop land. The 48-year average Friant supply to AEWSD is approximately 152,000 AF, but the 2014 contract allocation will provide zero AF. Conjunctive use of wells (both landowner and district wells) with direct and in-lieu recharge programs, as well as water management programs and groundwater banking programs, including use of carryover/rescheduled water from prior years have been implemented for drought protection to AEWSD water users/growers for many years. Nevertheless, the 2014 Friant supply allocation of zero is causing diminishing groundwater levels. Even with AEWSD's internal banking program, carryover water from 2013, its water management programs, and water recovered from outside banking projects, AEWSD still had to prorate and restrict its water users during a six month period (April through September) resulting in a 1.90 AF/acre allotment to its surface water service area. Provided the six month prorate, some growers fallowed land, and others are removing older permanent crops in order to deal with excessive groundwater pumping costs and/or shortages in District supplies. If 2015 were to be dry, impacts will become even more severe, and groundwater reserves will be diminished to the point of offering very little future drought protection.

As a region, if dry conditions continue into 2015, the potential impacts to the agricultural community will be devastating. Many of the irrigation districts in the Kern Region do not have significant reserved banked water remaining to meet agricultural water demands in 2015. Groundwater levels would continue to decline requiring the deepening of some wells, lowering of additional pumps, and abandonment of some wells.

### **At risk of not meeting ecosystem demands**

The drought has and will continue to impact the fish, wildlife, and habitat due to the inadequate water supply. The drought has reduced the water allocation that provides water to wetlands, including those at the Kern National Wildlife Refuge (KNWR). These wetlands support waterfowl, songbirds, shorebirds and raptors as well as other wildlife. KNWR will only receive 8,000 AF of its 21,000 AF average annual water allotment, reducing the wetlands from 6,500 acres to only 2,000 acres of habitat.

Fish have also been affected by the drought due to low runoff from the snowpack, which is the cause of rising water temperatures. Without an influx of freshwater the dissolved oxygen declines which endangers fish. Planting schedules have been altered at the Kern River hatchery on account of warmer water temperatures.

### **Drinking water MCL Violations**

Drinking water maximum contaminant level (MCL) violations typically do not occur for the greater Bakersfield area and other large and medium sized water systems due to redundancy in the water system. However, it should be noted that as water is pumped from greater depths from the Kern Fan area, arsenic concentrations are generally higher resulting in degraded water quality and the need for additional treatment (including ID4's wholesale water). Predominately, MCL violations occur for small rural water systems, where communities have limited water sources, funds for water treatment technologies, or other factors.

As mentioned, arsenic concentrations tend to increase with a dropping water table. BCWD had experienced higher arsenic levels in the recent past with one of its main water wells reading 14 parts per billion (ppb) in 2001 (arsenic MCL = 10 ppb). Since that time the well has dropped below 10 ppb, but arsenic levels could increase

with deeper groundwater levels. Recently, the total dissolved solids (TDS) concentration has increased in the same well to 1,200 mg/L (secondary MCL = 500 mg/L). This higher level of TDS is of concern to BCWD. As mentioned previously, the potential for water shortages could lead to low pressure situations that can cause contamination, especially with the older pipelines in the system.

The water system that serves the City of Arvin, which is located within AEWS's boundary, is also impacted by high arsenic levels. Five wells have arsenic levels ranging from 18 to 30 ppb. Arvin, a severely disadvantaged community, is working with CDPH to implement a water treatment project through Proposition 84 grant funding. The project will begin construction next year but will take three years to complete. The addition of freshwater sources to the groundwater supply would be of particular benefit to the City of Arvin. AEWS's project, as described in Attachment 3, would increase the amount of freshwater into the service area.

### **Groundwater Basin Overdraft**

As the 2014 combined surface water supplies from the Kern River, SWP, and CVP will yield approximately 200,000 AF (versus an average of 2,000,000 AF or 2 MAF), the Kern Region will see a record breaking year for total groundwater extraction for the Kern Sub-basin. Over the last 40 years, the average groundwater extraction from the Kern Sub-basin is estimated to be 1.3 MAF. The total groundwater extraction for this year is unknown; however, water users would need to recover more than 3 MAF to replace surface water shortages. Further, it is unlikely that this volume of water can actually be recovered even with the addition of many new and deepened extraction wells this year. The Kern Sub-basin is part of the Tulare Lake Basin. In the *Groundwater Availability of the Central Valley Aquifer*, the USGS estimated that the Tulare Lake Basin has a long-term historic imbalance of approximately 1.6 MAF/year (USGS, 2009). Thus, with the increased groundwater pumping occurring during this drought, that imbalance has been exacerbated, and groundwater levels have substantially dropped as evidenced in **Figure 2-2**, with some areas showing a drop of 60 feet or more.

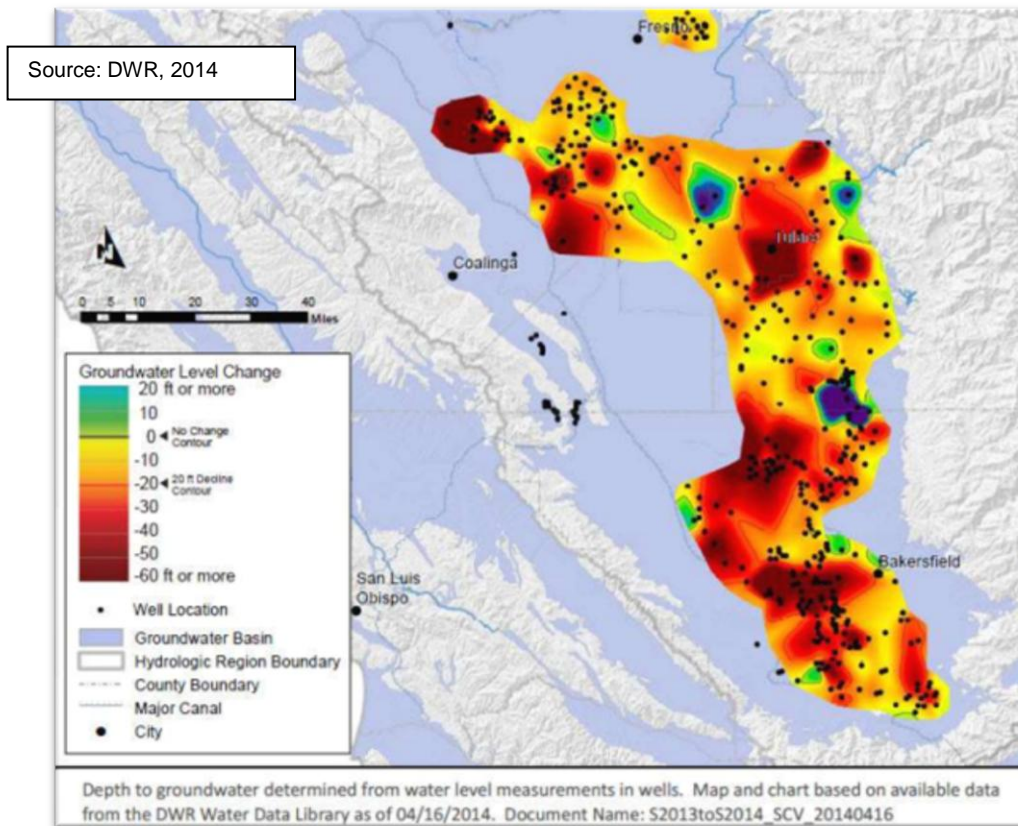
With these dropping groundwater levels, energy costs for pumping will increase substantially compared to prior years, additional wells will fail, wells and/or pumps will need to be deepened, water quality issues will arise, and there is potential for the return of inelastic land surface subsidence (which had been largely arrested by water supply, recharge, and banking projects).

### **Discharge water TMDL violation**

The Central Valley Regional Water Quality Control Board listed Lake Isabella on the Clean Water Act 303(d) list for pH and dissolved oxygen due to the inability to meet the Basin Plan's water quality objectives and impacting cold freshwater habitats (CVRWQCB, 2010, <http://goo.gl/epd3RL>). In this drought year the dissolved oxygen in the lake is expected to decrease as the lake is shallower and there is less circulation. This situation will make it difficult for fish to survive. Lake Isabella is the only water body listed for the Kern Region.

### **Other Drought related adverse impacts**

In 2012, Kern County crops yielded over \$6 billion in gross crop value, ranking number 2 in the nation (Kern County, 2013, <http://goo.gl/5OIRt2>). Initial estimates for gross farm revenue losses for the entire Tulare Lake Basin are over \$373 million (Howitt, 2014, <http://goo.gl/2Ind6F>). Additional impacts are anticipated for the industries that support agriculture, such as suppliers of seed, fertilizer, farm machinery, shippers, banks, and other financial institutions. Socioeconomic impacts will be felt by the farmworkers and those employed in agricultural related businesses, as household incomes decrease, jobs are lost, and food prices rise. In the 2009 drought year, Kern County had 1,400 fewer jobs compared to the previous year; and, as mentioned, the effects of this year are anticipated to be worse (Warnert, 2010, <http://goo.gl/dGR5Na>).



**Figure 2.1-2: Groundwater Level Change based on CASGEM Wells**

Besides the additional costs for groundwater pumping, KCWA member units (including ID4 and BVWSD) will also have to pay for the fixed costs of the SWP, and AEWSO will have to pay for the fixed cost of CVP, which cannot be quantified at this time. In 2014, the SWP fixed cost equates to \$1,500 per AF of the 50,000 AF that will be delivered through the Aqueduct. To avoid losing crops, many growers also participate in water purchases for drought relief from willing sellers at prices that have gone as high as \$2,200 per AF (on the order of ten times higher than a typical dry year), and subsequently dramatically cutting farm income, if any, in the process.



## **2.2 Water Conservation Measures**

Water conservation measures have been implemented on a region-wide basis as well as at the local water agency level. On a region-wide basis, the County of Kern, the Kern County Water Agency (KCWA) and the Water Association of Kern County (WAKC) have been at the center, distributing information regarding the drought and water conservation measures that individuals and businesses can implement. The following are examples of measures that have been enacted on a region-wide basis:

- Kern County and the KCWA adopted resolutions proclaiming a state of local emergency caused by the severe water shortage in anticipation of the severe drought conditions in 2014 (see **Appendices 2.2-A** and **2.2-B**).
- WAKC, an association funded and supported by agencies and businesses throughout Kern County including the project proponents, has played a crucial role in broadcasting the impacts of the drought and water conservation measures through television, newspapers, radio, websites, social media, advertisements on buses, and at local events such as the recent Nut Festival.
- WAKC, Metropolitan Bakersfield Water Purveyors, and local water conservation businesses held a Greater Bakersfield Water Conservation Day on July 12th. At the event water conservation information was provided to residents along with water-saving landscape ideas, and water conservation devices and appliances were demonstrated.
- ID4, Metropolitan Bakersfield water purveyors, and other water agencies held an Urban Water Forum on March 13<sup>th</sup> to discuss water supply issues and water conservation with members of the public.
- Kern County created a Drought Task Force (symposium) to meet with State officials regarding multiple drought-related issues such as drinking water and fire protection.
- KCWA and ID4 staff has presented drought information and response to the drought at multiple government and special interest meetings.

The four project proponents under this grant application have also implemented water conservation measures at the local level for the current drought (as well as in anticipation of a drought).

### **2.2.1 Agricultural Water Conservation Measures**

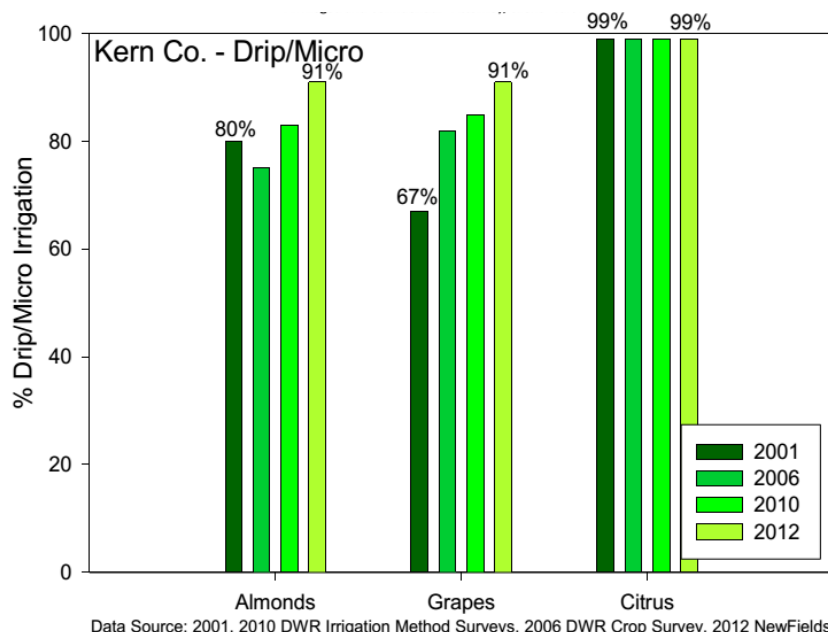
Kern Region farmers have undertaken extraordinary water conservation measures in response to the drought as most of the surface water supplies are not available this year. Efficient irrigation practices, groundwater banking, water exchanges, and deficit irrigation have saved many farmers that would have otherwise incurred large economic losses (in excess of what will occur this year).

As surface water availability has decreased and groundwater pumping costs have increased, Kern County farmers are utilizing state-of-the-art irrigation technologies to minimize over-application of water for crops. This is especially the case with permanent crops, which typically utilize drip/micro irrigation equipment to provide only the consumptive water needs of the crop.

Permanent crop acreages have increased significantly in the Kern Region to where it is approximately 54% of the irrigated area. The vast majority of the permanent crop fields have highly efficient drip/micro irrigation systems as shown in the graph to the right. A recent study of nitrate migration in the Kern Sub-Basin showed that these highly efficient irrigation systems result in limited deep percolation (Kimmelshue, 2013).

In addition to drip/micro irrigation systems, the farmers have utilized applicable efficient water management practices such as soil moisture monitoring systems, real-time irrigation scheduling, and automation of irrigation systems. These water management practices have increased irrigation efficiencies for multiple crops and irrigation system types as evidenced by the University of California Cooperative Extension research:

*From Fall 2000 through 2006 irrigation scheduling and soil moisture monitoring demonstrations and irrigation evaluations were conducted by the UC Cooperative Extension in 132 fields over 11,994 acres*



**Figure 2.2-1: Kern County Irrigation Types for Permanent Crops**

*with 30 different growers covering 14 different crops, 11 different soil textures and 9 different irrigation system types. Data collected from these sites indicated that the average on-farm application efficiency was 95%. Soil tests from these and many other Kern County fields show increasing salinity in the lower crop rootzone (mostly in micro irrigation systems) that corroborates this high level of efficiency – even to the point of causing toxicity and yield loss in some fields. For most of the Central Valley basins there is little, if any, “wasted” water to conserve. (Sanden, 2008, <http://goo.gl/nikRJP>).*

The conjunctive use of groundwater and surface water and the use of water exchanges have also been extremely important this drought year and in past dry years. Many of the irrigation districts in the Kern Region have limited surface water available this year and will rely upon previously banked water on the Kern Alluvial Fan and other groundwater banking areas. Valuable water exchanges are also being utilized to supplement water supplies. With these limited water supplies, in conjunction with the investments in many water conservation measures including drip/micro irrigation systems, lined canals, real-time irrigation scheduling, adjustment of historic water delivery patterns (i.e. less than 24 hour runs), and other water management practices, the farmers will be able to save most of the permanent crops this year. It should be noted that the farmers will also have to implement deficit irrigation, whereby just enough water is provided to the trees for survival but will yield a limited to no crop. And, the yield and crop quality impacts from deficit irrigation can continue for multiple years to come.

### **BVWSD Water Conservation Measures**

With the current drought, BVWSD has implemented a program with multiple water conservation measures, including a Land Fallowing Program and transitioning from existing open channel canals to a new pipeline system for delivery of water to northern lands in the District.

The Land Fallowing Program has been implemented by the District to help reduce groundwater extractions in a dry year. In 2014, approximately 8,300 acres have been fallowed (20% of the irrigated acreage in BVWSD). About half of the water supply that would have been used on these lands was exchanged with farmers in Kern Westside Districts, who have limited groundwater to turn to in times of drought (see **Appendix 2.2-C** for information on the Program). Proceeds from the exchanges will help pay for the Program as well as costs to implement other water conservation measures like construction of pipeline systems.

BVWSD is in the process of implementing a large scale pipeline system project to serve the northern portion of the District. This pipeline system will replace the existing earthen canals that currently allow surface water to

seep into a local perched aquifer. The project will consist of 16 miles of pipelines at an estimated cost of \$14 million. The estimated annual water savings from canal losses is estimated to be 14,000 AF. The project is expected to be completed in spring of 2015 in preparation for a potential dry (or drought) year.

Additionally, prior to the implementation of SBX7-7, BVWSD did not charge water tolls. BVWSD had metered the water for allocations, but did not charge for the water on a unit price basis; instead, the water cost was incorporated in the District Assessment. By charging for the water directly BVWSD has seen a marked improvement by growers in their water management practices.

#### ***Planned or Anticipated Actions if Drought or Dry Year Conditions Continue into 2015***

In anticipation of a dry year in 2015, BVWSD will review each of its wells, to see if they will need to have the pumps lowered. The District will investigate increasing pipelines so its wells can serve larger portions of the District. The District will also consider another Land Fallowing Program, to encourage additional fallowing of land. The District will also have to consider means to supply water to its northern lands which have no real groundwater supply. Depending on actual quantities of water available the District will consider how and where to deliver water within the District, if at all. Due to its unlined canals, and the minimal quantities of water available in 2014 the District did not deliver water, only the second time since 1924. It is unlikely that the flows will be as low as 2014 in 2015.

#### **AEWSD Water Conservation Measures**

Beginning in September 2013, AEWSD has sent multiple letters (see **Appendix 2.2-D** for copy of letters) to all of its landowners advising them of limited water supplies and urging further conservation. Six well-attended landowner meetings were conducted in February 2014 to advise the landowners of limited supplies, review District efforts to respond to the drought, and to promote water and resource conservation programs of the Natural Resources Conservation Service (see **Appendix 2.2-E** for agenda).

AEWSD also established a policy to prorate (ration) 2014 water supplies to no more than 1.9 AF/Acre to all customers from April through September (the period of time when surface supplies are needed the most to meet demands). During the October through March period, AEWSD's groundwater extraction facilities can meet its internal crop demand. This compares to 2.13 AF/Acre for latest 10-year average and 2.30 AF/Ac of 2013 deliveries over that same six month time-frame. To aid the growers to conserve, AEWSD modified its existing rules and regulations that requires a fixed water delivery rates for 24 hours to allow water users to take delivery at any rate and that of less than 24 hours (as long as those changes were communicated by the water order). Some growers with wells near AEWSD's canals participate in a Farm Well Pump-in Program (see **Appendix 2.2** for operating procedures) to stretch groundwater supplies further.

These water conservation measures supplement the District's prior robust water conservation programs, which are detailed in their 2012 Agricultural Water Management Plan, which has been accepted by both USBR and DWR.

The District has been very active in financially supporting and promoting on-farm water conservation measures for many years, such as the Mobile Lab Program through the Northwest Kern Resource Conservation District, supporting research and demonstration of soil moisture monitoring and irrigation scheduling practices with the University of California's Cooperative Extension, and promoting the NRCS' resource conservation programs. The District has committed to further promotion of the NRCS Environmental Quality Incentive Program to its growers as a condition of receiving USBR Water Conservation and Energy Efficiency grant funds for a pilot in-lieu recharge and canal structure modernization project, which is projected to begin October 1, 2014.

Through these water conservation measures and other on-farm decisions, AEWSD has experienced a reduction in monthly water deliveries. For example, the water deliveries for the month of June 2014 were the lowest over the last 10 years.



***Planned or Anticipated Actions if Drought or Dry Year Conditions Continue into 2015***

If the drought or dry conditions continue into 2015, AEWSD would continue the same programs from 2014 as discussed above (prorate water supplies, pump-in, reallocation/turnback, less than 24 hr delivery). But each program could change in that the prorate amount may be much lower than the 1.9 AF/acre depending on surface water allocations, and AEWSD would look to add more farm wells to pump into the canal.

It is anticipated that the Board would also consider a fallowing program on the non-permanent acreage, similar to BVWSD, and assist those with permanent plantings.

**ID4 Water Conservation Measures**

With the onset of the 2014 drought, ID4 (as a wholesaler of water) has reduced water deliveries to the Metropolitan Bakersfield water purveyors by 32% in proportion to their 2014-15 contract amount for water as shown in **Table 2.2-1**. As a wholesale water provider, ID4 does not have the jurisdiction to implement water conservation measures at the retail customer level. However, ID4 is currently working with the water purveyors to implement measures including requests for voluntary water conservation by the public, mandated water restrictions for public facilities, and water use efficiency and conservation projects. Additionally, ID4 and the water purveyors implement a far-reaching water conservation educational program for the local schools. The following are water conservation measures implemented by the water purveyors.

**Table 2.2-1: Metropolitan Bakersfield Water Purveyors Served by ID4**

<b>Water Purveyor</b>	<b>2014-15 Contract Amount for Water from ID4 (AF)</b>	<b>Estimated Water Deliveries for 2014 (AF)</b>	<b>Population</b>
City of Bakersfield	6,500	4,388	118,600
California Water Service (Calwater)	19,000	12,825	225,000
East Niles Community Services District (ENCSD)	11,000	7,425	25,000
North of the River Municipal Water District (NORMWD) <sup>1</sup>	10,900	7,358	38,000
<b>TOTAL</b>	<b>47,400</b>	<b>32,000</b>	<b>406,600</b>

<sup>1</sup> NORMWD provides service to a retail population of 6,000 and wholesale water to the Oildale Mutual Water Company (OMWC). It should be noted that on July 1 NORWMD merged with OMWC.

<sup>2</sup> Source: ID4 and NORMWD 2010 Urban Water Management Plan

**City of Bakersfield:** In January, the City Council adopted a resolution supporting the Governor's drought declaration and its call for citizens to voluntarily conserve 20% of their water use (see **Appendix 2.2-G**). After investigating potential water conservation measures the City adopted a resolution to implement mandatory water conservation measures by the recreation and parks, public works, police, and fire departments (see **Appendix 2.2-H**). One project that will be implemented is the installation of water conservation irrigation controllers at City parks that was partially funded by the Proposition 84 Round 2 Implementation Grant. That grant also helps fund rebates for water conservation devices for customers. With these water conservation measures, the City expects to conserve over 1,000 AF annually after implementation of all conservation directives.

**Calwater:** Through its website and other media, Calwater has called upon its customers to conserve 20% of their water use (see **Appendix 2.2-I**). In addition to this water conservation directive, Calwater continues to implement its successful water conservation programs. As seen on the 2013 Water Conservation Report, the local

conservation programs resulted in 49 million gallons of water savings (see **Appendix 2.2-J**). With the publicity of the 2014 drought as well as rate increases, additional water conservation will occur in the service area adding to the cumulative water savings effect.

**ENCSD:** The ENCSD has also called upon its customers to conserve 20% of their water use (see **Appendix 2.2-K**). District operations staff travel the service area and identify properties that are wasting water and leave notes for the residences. A news article was recently published regarding the District's water conservation measures and how the SWRCB's emergency regulation on water conservation is being implemented by ENCSD (see **Appendix 2.2-L**).

**OMWC:** The OMWC continues to implement a water patrol program to raise awareness of the importance of conservation to service area customers and has also called upon its customers to conserve 20% of their water use (see **Appendix 2.2-M** for March 2014 newsletter).

**Water Education Program:** ID4 and the water purveyors fund a comprehensive Water Education Program to educate local students about Kern County's water supplies, the importance of water and water conservation. The program incorporates teacher workshops, curriculum materials, assemblies, classroom presentations and student contests. For each of these events, there will be an added emphasis on the 2014 drought. Currently the program has been developed for kindergarten to 6<sup>th</sup> grades, but with additional funding through the Round 2 Implementation Grant, new curriculum and workshops will be prepared for 7<sup>th</sup> through 12<sup>th</sup> grades.

#### ***Planned or Anticipated Actions if Drought or Dry Year Conditions Continue into 2015***

ID4 will continue to implement its Water Shortage Contingency Plan if the drought continues into 2015. Actions include:

1. Temporarily halting or curtailing water spread for recharge in ID4 to diminish a shortage in treated water deliveries;
2. Utilizing groundwater banking projects and in-district wells to reduce shortages in treated water deliveries;
3. Allowing non-ID4 water to be delivered to the Henry C. Garnett Water Purification Plant for treatment; and
4. Apportioning available treated water among ID4 customers in proportion to annual contract entitlements.

ID4 has implemented all four actions in 2014 and would continue to do so until the drought subsides. ID4 will also continue working with the water purveyors in implementing conservation measures.

#### **BCWD Water Conservation Measures**

BCWD has enacted water conservation measures in the District. The district periodically distributes a bilingual flier with water conservation directives along with a customer's water invoice (see **Appendix 2.2-N**). Additionally the Board of Directors issued a resolution in support of the Governor's Drought Proclamation, requesting customers reduce their water use by 20% (see **Appendix 2.2-O**). The desire of the District is implement customer water meters and replace old leaky pipelines to achieve significant water conservation measures.

#### ***Planned or Anticipated Actions if Drought or Dry Year Conditions Continue into 2015***

The District will continue to monitor groundwater levels at its wells and monitor pump flowrates to ensure that adequate water supply is provided to the residents. If pumping capacity continues to decline, mandatory conservation will be considered by the District Board of Directors.